REMARKS

Claims 11-24 are pending in the present application. By this response, claims 11, 15 and 19 are amended. Claim 11 is amended to recite "determining, by the hypervisor, an identity of the one of the plurality of operating system images; encoding, by the hypervisor, the message and the identity into a new message; and transmitting, by the hypervisor, the new message to an external data processing system for presentation to a user." Reconsideration of the claims in view of the above amendments and the following remarks is respectfully requested.

I. Examiner Interview

Applicant thanks Examiner Tang for the courtesies extended to Applicant's representative during the November 3, 2005 telephone interview. During the interview, the applied rejections and the above amendments were discussed. The Examiner indicated that the Non-Statutory Obviousness-Type Double Patenting rejection would be withdrawn. Additionally, the Examiner indicated that he would consider the amendments and perform another search. The substance of the interview is summarized in the remarks of sections that follow.

II. Non-Statutory Obviousness-Type Double Patenting

The Office Action rejects claims 11-24 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 4 of co-pending Application No. 09/589661 in view of Weitzsch et al. (EP 0419723 A1). This rejection is respectfully traversed.

Section 804.01 of the Manual of Patent Examining Procedure, reads as follows:

> 804.01 Prohibition of Double Patenting Rejections Under 35 U.S.C. 121 [R-3]
>
> 35 U.S.C. 121 authorizes the Director to restrict the claims in a patent application to a single invention when independent and distinct inventions are presented for examination. The third sentence of 35 U.S.C. 121 prohibits the use of a patent issuing on an application with respect to

> which a requirement for restriction has been made, or on an application filed as a result of such a requirement, as a reference against any divisional application, if the divisional application is filed before the issuance of the patent. The 35 U.S.C. 121 prohibition applies only where the Office has made a requirement for restriction. The prohibition does not apply where the divisional application was voluntarily filed by the applicant and not in response to an Office requirement for restriction. This apparent nullification of double patenting as a ground of rejection or invalidity in such cases imposes a heavy burden on the Office to guard against erroneous requirements for restrictions where the claims define essentially the same invention in different language and which, if acquiesced in, might result in the issuance of several patents for the same invention.
>
> The prohibition against holdings of double patenting applies to requirements for restriction between the related subjects treated in MPEP § 806.04 through § 806.05(j), namely, between combination and subcombination thereof, between subcombinations disclosed as usable together, between process and apparatus for its practice, between process and product made by such process and between apparatus and product made by such apparatus, etc., so long as the claims in each application are filed as a result of such requirement.

Applicant respectfully submits that the Examiner issued a Restriction Requirement in co-pending Application No. 09/589,661 on November 5, 2003. Therefore, per 804.01 of the MPEP, the Examiner is prohibited from using co-pending Application No. 09/589,661 in a Double Patenting rejection against the present application. Thus, Applicant respectfully requests the obviousness-type double patenting rejection of claims 11-24 be withdrawn.

III. 35 U.S.C. § 103, Alleged Obviousness, Claims 11-24

The Office Action rejects claims 11-24 under 35 U.S.C. § 103(a) as being unpatentable over Noel et al. (U.S. Publication No. 2002/0016891 A1) in view of Weitzsch et al. (EP000419723 A1). This rejection is respectfully traversed.

As to claim 11, the Office Action states:

> As to claim 11, Noel teaches a method of providing separate copies of shared resources to each of multiple partitions within a data processing system, the method comprising:
>
> receiving, at a hypervisor, a message (request) from a one of a plurality of operating system images, executing within the data processing system, intended for a shared resource *([0007])*;

> determining an identity of the one of the plurality of operating system images (can be identified from operating system instance ID) *([0051])*;
>
> transmitting the new message to an external data processing system for presentation to a user (passing messages over a communication network) *([0006])*.
>
> Noel fails to explicitly teach encoding the message and the identity into a new message and the identity into a new message. However, Witzsch teaches a software coded message such as a request attached with identity codes (VMID) for transmission involving a hypervisor *(see Abstract)*. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of encoding the message and the identity into a new message into Noel's messaging/requesting system involving a hypervisor because this would reduce complexity *(see Abstract)*.

Office Action dated August 25, 2005, page 4.

Claim 11, which is representative of the other rejected claims 15 and 19 with regard to similarly recited subject matter, reads as follow:

> 11. A method of providing separate copies of shared resources to each of multiple partitions within a data processing system, the method comprising:
>
> receiving, at a hypervisor, a message from a one of a plurality of operating system images, executing within the data processing system, intended for a shared resource;
>
> determining, by the hypervisor, an identity of the one of the plurality of operating system images;
>
> encoding, by the hypervisor, the message and the identity into a new message; and
>
> transmitting, by the hypervisor, the new message to an external data processing system for presentation to a user.

Noel and Weitzsch, taken alone or in combination, fail to teach or suggest determining, by the hypervisor, an identity of the one of the plurality of operating system images; encoding, by the hypervisor, the message and the identity into a new message; and transmitting, by the hypervisor, the new message to an external data processing system for presentation to a user.

Noel is directed to reconfiguring memory in a multiprocessor system with shared memory. In the Noel system, multiple instances of operating systems execute cooperatively in a single multiprocessor computer where all processors and resources are electrically connected together. The single physical machine with multiple physical

processors and resources is adaptively subdivided by software into multiple partitions, each with the ability to run a distinct copy, or instance, of an operating system. Each of the partitions has access to its own physical resources plus resources designated as shared. The Noel software logically and adaptively partitions CPUs, memory, and I/O ports by assigning them together. An instance of an operating system may then be loaded on a particular partition.

Noel and Weitzsch, taken alone or in combination, fail to teach or suggest determining, by the hypervisor, an identity of the one of the plurality of operating system images. The Office Action alleges that this feature is taught by Noel at paragraph 0051, which reads as follows:

> [0051] As previously mentioned, the console program communicates with an operating system instance by means of an HWRPB which is passed to the operating system during operating system boot up. The fundamental requirements for a console program are that it should be able to create multiple copies of HWRPBs and itself. Each HWRPB copy created by the console program will be capable of booting an independent operating system instance into a private section of memory and each operating system instance booted in this manner can be identified by a unique value placed into the HWRPB. The value indicates the partition, and is also used as the operating system instance ID.

In this paragraph, Noel describes a console program that communicates with an operating system instance, using a hardware restart parameter block. The hardware restart parameter block contains an operating system instance identifier. However, the console program logically divides the physical hardware into partitions (see paragraph [0038]). Noel further teaches that it is the responsibility of an operating system instance to use the resources appropriately and provide coordination of resource allocation and sharing. Additionally, Noel teaches that a hypervisor controls the assignment of resources, which are logically divided by the console program of Noel, to each virtual machine (see paragraph [0007]). Thus, Noel teaches a console program that identifies an id of an operating system image. Noel does not teach a hypervisor that determines an identity of the one of the plurality of operating system images.

Furthermore, Noel and Weitzsch, taken alone or in combination, fail to teach or suggest encoding, by the hypervisor, the message and the identity into a new message.

The Office Action acknowledges that Noel does not teach this feature. However, the Office Action alleges that Weitzsch teaches this feature in the abstract, which reads as follows:

> To reduce the complexity and the time losses due to switching on the hypervisor, interrupt requests of the input/output system (IOS) are managed by a central interrupt control (UB-ST) to which all interrupt requests from the input/output system (IOS) are supplied ordered in accordance with identity codes (VMID) of the associated virtual machine (VM...) and of the respective interrupt class (UBK...). In addition, each processing processor (CPU...), when allocated to a virtual machine (VM...), transmits the associated identity code (VMID) and the associated processor-related interrupt mask (UM) so that the interrupt control (UB-ST) can determine deliverable interrupt requests without loading the processing processors (CPU...). In addition, selected virtual machines and processing processors can be marked as required in the interrupt control via one of the processing processors, on initiation by the hypervisor, and simulated requests of the hypervisor can be stored so that interrupt requests of the input/output system, selected as global requests for non-running marked virtual machines, can be delivered to one of the marked processing processors and requests of the hypervisor for a running virtual machine can also easily be supplied to the associated processing processor.

In this abstract, Weitzsch describes a processing processor that transmits the associated identity code and the associated processor-related interrupt mask, so that the interrupt control can determine deliverable interrupt requests without loading the processing processors. Thus, the processor of Weitzsch actually transmits an associated identity code and the associated processor-related interrupt mask to an interrupt control. Weitzsch further teaches that once the hypervisor initiates the interrupt control, selected virtual machines and processing processors can be marked as required in the interrupt control via one of the processing processors. Thus, the hypervisor of Weitzsch does not encode a message and an identity into a new message.

Still further, Noel and Weitzsch, taken alone or in combination, fail to teach or suggest transmitting, by the hypervisor, the new message to an external data processing system for presentation to a user. The Office Action alleges that this feature is taught by Noel at paragraph 6, which reads as follows:

> [0006] The availability and maintainability issues were addressed by a "shared everything" model in which a large centralized robust server that contains most of the resources is networked with and services many small, uncomplicated client network computers. Alternatively, "clusters" are used in which each system or "node" has its own memory and is controlled by its own operating system. The systems interact by sharing disks and passing messages among themselves via some type of communications network. A cluster system has the advantage that additional systems can easily be added to a cluster. However, networks and clusters suffer from a lack of shared memory and from limited interconnect bandwidth which places limitations on performance.

In this paragraph, Noel describes systems interacting by sharing disks and passing messages among themselves via some type of communications network. There is nothing in any section of Noel or Weitzsch that teaches of suggests a hypervisor transmitting a new message to an external data processing system for presentation to a user.

As to claim 23, the Office Action states:

> As to claim 23, Noel teaches a system for partitioning shared resources *(Fig. 2, items 200, 208, 210, 212, etc.)*, the system comprising:
>
> a first data processing system *(Fig. 2, 200)* comprising:
>
> a plurality of partitions each corresponding to separate one of a plurality of operating system images (operating system instances) *(Fig. 2, items 200, 208, 210, 212, etc.)*;
>
> a plurality of assignable resources *([0007])*; and
>
> a hypervisor for providing each partition a separate one of a shared system resource *([0007]-[0008])*;
>
> a second data processing system coupled to the first data processing system, wherein the second data processing system receives a message from the hypervisor (passing messages over a communication network) *([0006]-[0007])*.
>
> Noel fails to explicitly wherein the message indicates to which of the plurality of operating system images the messaging belong, and wherein the second data processing system displays the message to a user with an indication of the operating system image corresponding to the message. However, Witzsch teaches a software coded message such as a request attached with identity codes (VMID) for transmission involving a hypervisor, wherein the identity codes help to identify and select between images within virtual machines or processing processors *(see Abstract)*. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of wherein the message indicates to which of the plurality of operating system images the message belong, and wherein the second data processing system displays the

message to a user with an indication of the operating system image corresponding to the message to the existing message/requesting system of Noel because this would reduce complexity *(see Abstract)*.

Office Action dated August 25, 2005, pages 6-7.

Claim 23, reads as follows:

> 23. A system for partitioning shared resources, the system comprising:
> a first data processing system comprising:
> a plurality of partitions each corresponding to separate one of a plurality of operating system images;
> a plurality of assignable resources; and
> a hypervisor for providing each partition a separate one of a shared system resource;
> a second data processing system coupled to the first data processing system, wherein the second data processing system receives a message from the hypervisor, wherein the message indicates to which of the plurality of operating system images the message belong, and wherein the second data processing system displays the message to a user with an indication of the operating system image corresponding to the message.

Noel and Weitzsch, taken alone or in combination, fail to teach or suggest wherein the message indicates to which of the plurality of operating system images the message belong, and wherein the second data processing system displays the message to a user with an indication of the operating system image corresponding to the message.

The Office Action acknowledges that Noel does not teach this feature. However, the Office Action alleges that Weitzsch teaches this feature in the abstract, shown above. As discussed previously, Weitzsch describes a processing processor that transmits the associated identity code and the associated processor-related interrupt mask, so that the interrupt control can determine deliverable interrupt requests without loading the processing processors. Thus, the processor of Weitzsch actually transmits an associated identity code and the associated processor-related interrupt mask to an interrupt control. Weitzsch further teaches that once the hypervisor initiates the interrupt control, selected virtual machines and processing processors can be marked as required in the interrupt control via one of the processing processors. Thus, while the system of Weitzsch may include a hypervisor, the hypervisor of Weitzsch does not send a message to a data processing system that indicates to which of the plurality of operating system images the message belong, and wherein the second data processing system displays the message to

a user with an indication of the operating system image corresponding to the message. The interrupt controller receives an associated identity code and the associated processor-related interrupt mask from a processor, so that the interrupt control can determine deliverable interrupt requests without loading the processing processors.

Furthermore, there is not so much as a suggestion in either reference to modify the references to include such features. That is, there is no teaching or suggestion in Noel or Weitzsch that a problem exists for which a hypervisor that determines an identity of the one of the plurality of operating system images, encodes the message and the identity into a new message, and transmits the new message to an external data processing system for presentation to a user is a solution. To the contrary, Noel only teaches a console program that logically divides the physical hardware into partitions. Weitzsch teaches an interrupt control that can determine deliverable interrupt requests without loading the processing processors. Neither reference even recognizes a need for a hypervisor that determines an identity of the one of the plurality of operating system images, encodes the message and the identity into a new message, and transmits the new message to an external data processing system for presentation to a user, as recited in claim 11.

Moreover, neither reference teaches or suggests the desirability of incorporating the subject matter of the other reference. That is, there is no motivation offered in either reference for the alleged combination. The Office Action alleges that the motivation for the combination is "because it would reduce complexity." Neither reference teaches a hypervisor that performs all of the functions presently recited in the independent claims. Thus, the only motivation to even attempt the alleged combination would be based on a prior knowledge of Applicant's claimed invention, thereby constituting impermissible hindsight reconstruction using Applicant's own disclosure as a guide.

One of ordinary skill in the art, being presented only with Noel and Weitzsch, and without having a prior knowledge of Applicant's claimed invention, would not have found it obvious to combine and modify Noel and Weitzsch to arrive at Applicant's claimed invention. To the contrary, even if one of ordinary skill in the art were somehow motivated to combine Noel and Weitzsch, and it were somehow possible to combine the two systems, the result would not be the invention recited in claim 11. The result would be a console program that logically divides the physical hardware into partitions and an

interrupt control that can determine deliverable interrupt requests without loading the processing processors.

Thus, Noel and Weitzsch, taken alone or in combination, fail to teach or suggest all of the features in independent claims 11, 15, 19 and 23. At least by virtue of their dependency on claims 11, 15, 19, and 23, the specific features of claims 12-14, 16-17, 20-22, and 24 are not taught or suggested by Noel and Weitzsch, either alone or in combination. Accordingly, Applicant respectively requests withdrawal of the rejection of claims 11-24 under 35 U.S.C. § 103(a).

IV. Conclusion

It is respectfully urged that the subject application is patentable over the prior art of record and is now in condition for allowance. The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,

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